S
639.9
W-72-R-11
A-3
1966

STATE DOCUMENTS

JOB COMPLETION REPORT
RESEARCH PROJECT SEGMENT

State of Montana

Name Wildlife Investigations, District 2

Project No. W-72-R-11

Title Elk Migration & Production Investigations - Bitterroot

Job. No. A-3

Period Covered: July 1, 1965 - June 30, 1966

ABSTRACT:

Forty-seven elk were trapped, ear-tagged and fitted with plastic covered collars at five trap sites in the upper Bitterroot drainage. The elk were then released at the trap sites and aerial observations were made during the spring and summer to trace their movements. Sixty-one observations of marked elk were recorded in the spring while the elk were still on winter range, but only eight observations were recorded on summer range.

The range in movements from trapsites of marked animals on winter range was from zero to 6 miles. Summer observations ranged from less than one mile to 11 miles from the trap-sites.

Winter composition counts of 333 elk showed 26 bulls and 39 calves per 100 cows in the upper Bitterroot. There appeared to be a higher ratio of calves in the West Fork (District 25) than in the East Fork (District 27). Elk have been more heavily harvested in the West Fork than the East Fork during the past few years.

Summer herd composition counts were attempted by means of aerial surveys. For a sample of 269 elk there were 6 bulls and 36 calves per 100 cows. Counts made in late July yielded a higher proportion of calves than those in late June.

Harvest data were obtained at the Darby checking station. A total of 307 elk were checked from the upper Bitterroot. Of these, 201 were checked from District 25, and 106 from District 27. Harvest composition was 121 bulls and 66 calves per 100 cows from District 25 compared to 115 bulls and 50 calves per 100 cows from District 27. These data support the results of composition counts which also indicated higher calf production in District 25 than in District 27.

Thorough aerial trend counts were made in the upper Bitterroot in the spring of 1965 and 1966. The number of elk counted in the two hunting districts was 1508 in 1965 and 1474 in 1966. Counts were lower in 1966 because of more difficult counting conditions.

An attempt was made to estimate the wintering elk populations in the area by the Lincoln Index method, utilizing marked animals. Results for individual flights were variable. Estimates based on average figures from several flights were 890 elk for hunting district 27 south of Rye Creek, and 158 for hunting district 25 north of Trapper Creek.

MONTANA STATE LIBRARY
930 East Lyndale Avenue
Helena, Montana 59601

OBJECTIVES:

To determine the extent of the migratory movement of elk which winter in the upper Bitterroot drainage; and to obtain data on calf production, herd composition, and population trends to aid in the evaluation of recent elk management practices.

TECHNIQUES USED:

Elk were baited into corral-type traps at five trap locations in the upper Bitterroot. Trapped elk were tagged in each ear with numbered aluminum tags and a pre-sewn, plastic-covered collar was slipped over the head of each antlerless elk. Collars for bulls were fitted with belt lacing at each end and fastened on the bull's neck by running a wire through the belt lacing. A separate color combination was used for each trap location.

Frequent flights were made during the spring and summer to locate marked elk. Forest Service personnel were alerted to watch for marked elk also.

Herd composition data were obtained partly by summer aerial surveys, but chiefly by winter ground classification counts, using binoculars and spotting scopes. Aerial counts for population trend determinations were made with a Piper Super Cub. Trend counts were made chiefly during April in early morning and late afternoon, while elk were feeding in open, grassy areas.

Data concerning sex-age composition of hunter-harvested elk were obtained at the Darby checking station.

FINDINGS:

Movements

A total of 47 elk were trapped and tagged at the five trap sites. Their distribution among the different traps is shown in Table 1. Tag numbers are listed in the A-1 report of Project W-72-R-11.

Re-sightings of neck-banded elk totalled 69 up to August 31, 1966 (Table 2). Sixty-one observations occurred in the spring (March-May), still on the winter range in the vicinity of trap sites. Only 8 were observed on summer range. Seven of these were marked at the McCoy Creek trap, and six of them were observed in July, west of the trap site, in the high sub-alpine country along the Rock Creek-Tin Cup Creek divide. Two of these, observed July 28, were within a mile of the Montana-Idaho boundary. One elk was observed in August on the lowland meadows east of the McCoy trap site, indicating year-long occupancy of the winter range by some elk.

The remaining observation on summer range was made June 23, when one cow, banded on the Bitterroot Game Range, was seen in the mountain meadows northeast of Skalkaho Mountain.

Some tag returns were received during the 1966 hunting season. These, and additional resightings, will be mapped and included in a subsequent report.

Production & Herd Composition

The results of winter herd composition counts are shown in Table 3. For a sample of 333 elk classified in the upper Bitterroot there were 26 bulls per 100 cows, 66 spikes per 100 older bulls, and 39 calves per 100 cows. A small sample in the West Fork (district 25) indicated considerably better production than in district 27. This is possibly a reflection of better harvests in district 25 during the past few years.

Summer composition counts were attempted by aerial observation. The results of these counts are shown in Table 4. For a sample of 269 classified elk there were 6 bulls and 36 calves per 100 cows. Bulls were not seen in their true proportion in the herd. There was also evidence that calves were being missed in proportionately greater numbers than cows during the early part of the summer. Counts made up to the first of July showed 32 calves per 100 cows, while those made in late July showed 53 calves per 100 cows. Fewer elk were seen per unit of effort in late July than in late June.

Harvest Data

A checking station situated a mile south of Darby provided a means of obtaining a record of most of the elk taken in the upper Bitter Root (Table 5). A total of 307 elk were checked through the Darby station. Of these, 201 were from District 25, and 106 from District 27. The composition of the harvest was 121 bulls and 66 calves per 100 cows in District 25, and 115 bulls and 50 calves per 100 cows from District 27. These data support the results of composition counts which also indicated higher calf production in District 25 than in District 27.

Age of elk by dentition was determined when possible (Table 6). Many elk were packed out in quarters, without heads, and could not be aged. In cases where hunters had the canines, age was determined by canine characteristics developed by Kenneth Greer at the Department's Wildlife Laboratory in Bozeman.

Adult elk examined were predominantly in younger age classes. Thirty-five percent were yearlings, 17 percent 2½ year-olds, 41 percent prime (from 3½ to 7½ years) and 6 percent were classed as "old". The criterion upon which the "old" category is based is the first molar having been worn smooth (no infundibulum). A higher proportion of females, 13 percent, was in the "old" age class, compared to less than 2 percent for males. This indicates a greater survival for cows than for bulls.

Aerial Trend Counts

Aerial counts in the upper Bitterroot were begun March 14 and completed May 5, 1966. A total of 1474 elk was counted in hunting districts 25 and 27 during the spring of 1966, compared to 1508 in 1965. In hunting district 25, 528 elk were observed in 1966, compared to 512 in 1965. In District 27, 946 were observed in 1966 compared to 996 in 1965. Elk were more scattered during the spring of 1966 because of the milder weather during the 1965-66 winter. This made them more difficult to count and resulted in a relatively low count compared to 1965. The distribution of observed elk is shown in Table 7. A more scattered distribution, with more elk at higher elevations in 1966 is indicated by these observations, particularly in the West Fork area (District 25).

Population Estimates

Counts of marked elk versus unmarked elk during aerial surveys were made. Estimates of elk populations using winter range areas in which marked elk were dispersed were attempted by application of the Lincoln Index procedure. When based on individual flights these estimates varied so widely that the method did not seem feasible for obtaining accurate population figures, at least with the relatively small number of marked elk in the population in 1966. Estimates based on average numbers of marked, versus unmarked, elk seen on several flights were made in the two areas with the largest numbers of marked elk. These estimates were 890 elk in hunting district 27 south of Rye Creek, and 158 in the portion of hunting district 25 north of Trapper Creek.

RECOMMENDATIONS:

1. A greater number of elk should be marked. This is difficult to do with present methods during a mild winter. Unless more efficient methods can be employed, trapping and marking should be emphasized only in relatively severe winters when the results are more commensurate with the effort.

2. Indications are that most of the McCoy Creek elk move westward toward the Bitterroot-Selway divide instead of southward into the West Fork drainage. A trap should be placed in the West Fork drainage to obtain information on the movements of the elk which winter in the West Fork.

3. Larger samples of herd composition data should be obtained from each upper Bitterroot hunting district, particularly District 25.

4. Aerial trend counts are time-consuming and expensive. Thorough counts are not feasible every year. They should be made only after relatively hard winters for most accurate results.

5. Surveys of range condition and trend should be intensified and data obtained on food habits of elk in the area. During mid-winter when snow is deep, these elk appear to spend most of their time in the timber. What do they eat then? If it is browse, they are almost out of a food supply in the East Fork.

Prepared by: Reuel G. Janson

Approved by Wynn Freeman

Date: March 31, 1967

Table 1. Elk trapped and marked at five trap sites in the Bitterroot Unit, winter, 1965-66

	No. elk				
Trap site	Bulls	Cows	Calves	Total	Color of neck-band
Wetzsteon Ranch	2	8	3	13	blue on white
Pasture Draw	0	3	1	4	black on green
Gird	0	2	1	3	green
Bitterroot Game Range	0	1	1	2	black on white
McCoy Gulch	4	19	2	25	white
Totals	6	33	8	47	

Table 2. Observations of neck-banded elk, spring & summer, 1966

	Observations				Distance and direction from trap site
		No. elk in group			
Trap site	Date	banded	unbanded	Location	
Wetzsteon Ranch	3/5/66	2M*	1	Badger Gulch (East Fork Bitterroot)	1½ mi. N.W.
	3/14/66	1F	23	Barley Ridge " "	1½ mi. S.W.
	3/14/66	1F	18	Barley Ridge " "	1½ mi. S.W.
	3/24/66	2M	1	Pasture Draw " "	2½ mi. N.
	3/24/66	1F	12	Tolan Creek " "	1½ mi. S.W.
	4/8/66	2M	1	Pasture Draw " "	2½ mi. N.
	4/8/66	2F	3	Springer Creek" "	3 mi. E.
	4/8/66	1F	5	Tolan Creek " "	1½ mi. S.E.
	4/8/66	1F	2	Tolan Creek " "	1½ mi. S.E.
	4/8/66	1F	3	N. Side Tolan Cr. "	1½ mi. S.
	4/11/66	2M	0	2% road west side of French Basin "	6 mi. N.W.
	4/28/66	3F	14	French Basin "	3½ mi. N.
	4/28/66	1F	11	Reimel Ridge "	2 mi. S.W.
	4/29/66	1F	45	Barley Ridge "	1 mi. S.W.
	4/29/66	1F	15	Tolan Creek "	1 mi. S.E.
	4/29/66	1	10	Springer Cr. "	3 mi. E.
	4/29/66	1	10	Reimel Cr. "	1½ mi. S.W.
Pasture Draw	3/24/66	2(1F,1ca)	0	Pasture Draw. "	½ mi. N.
	4/8/66	2F	4	E. of George's Draw "	2 mi. E.
	4/28/66	1F	13	Bunch Gulch "	1 mi. S.E.

Table 2. (continued)

	Observations				Distance and direction from trap site
		No. elk in group			
Trap site	Date	banded	unbanded	Location	
Gird Creek	4/5/66	3F	54	S. Side Gird Creek	½ mi. N.
	4/12/66	3F	17	S. Side Gird Creek	½ Mi. E.
	4/20/66	1F	24	S. Side Gird Cr.	½ mi. N.
Bitterroot Game Range	3/8/66	1F	108	Gird Cr.-Charley Gulch Ridge	1½ mi. S.W.
	3/29/66	1F	20	N. Side Gird Creek	5½ mi. S.W.
	6/23/66	1F	38	Skalkaho Basin	6 mi. E.
McCoy Creek	4/11/66	1F	8	McCoy-Chaffin Ridge	½ mi. S.
	4/11/66	4F	14	McCoy-Chaffin Ridge	½ mi. S.
	4/11/66	2F	3	McCoy-Chaffin Ridge	½ mi. S.
	4/11/66	3F	5	McCoy-Chaffin Ridge	½ mi. So.
	4/8/66	5F	20	McCoy Creek	½ mi. S.W.
	4/25/66	1F	1	McCoy Creek	½ mi. S.W.
	4/25/66	3F	5	McCoy Creek	½ mi. S.W.
	4/25/66	1F	3	McCoy Creek	½ mi. S.W.
	4/25/66	1F	6	McCoy Creek	½ mi. S.W.
	4/25/66	1F	8	McCoy-Chaffin Ridge	1 mi. S.
	May	1	-	Chaffin-Trapper Ridge	3½ mi. S.
	7/8/66	3F	-	1½ mi. E. of Como Peaks	7 mi. W.
	7/15/66	1F	-	½ mi. NW Kerlee Lake	9 mi. W.
	7/28/66	2F	6	Tin Cup-Capitan Cr. Divide	10 mi. W.

*Sex shown by M for male, F for female, ca for calf

Table 3. Elk herd sex-age composition in the upper Bitterroot from field-classified counts, winter 1965-66

Hunting district	Sample size	Adult bulls	Spike bulls	Cows	Calves	Bulls/ 100 cows	Spikes/100 older bulls	Calves/ 100 cows
25	56	-	2	35	19	6	-	54
27	277	32	19	166	60	31	59	36
Total	333	32	21	201	79	26	66	39

Table 4. Elk classified during flights over Bitterroot summer elk range

Date	Location	Elk observed					
		Bulls	Cows	Calves	Uncl.	Total	Calves/100 cows
6/23/66	Head of East Fork	4	-	-	6	10	-
6/23/66	Frog Pond Basin	-	-	-	15	15	-
6/23/66	Skalkaho Basin	1	30	11	40	82	37
6/27/66	Shook Mountain-Medicine Point	-	31	6	-	41	19
6/27-7/1	Porcupine Saddle-Maynard Creek	4	40	14	-	58	35
7/1/66	Watchtower-Sheepshead	-	8	3	-	11	
7/1/66	Beaver Creek	-	11	4	-	15	36
7/1/66	Hughes Creek	-	39	13	-	52	33
Sub-totals		9	159	51	61	294	32
7/26-28	Tin Cup-El Capitan	1	7	4	-	12	-
7/26	Wiles Creek		4	1	-	5	-
7/26	Fish Lake		3	1	-	4	-
7/26	Skalkaho Basin		10	7	-	17	-
8/1	Watchtower-Sheepshead		8	4	-	12	-
Sub-totals		1	32	17	-	50	53
Totals		10	191	68	61	344	36

Table 5. Elk harvest data from the Darby checking station, 1965

Area	Adult bulls		Adult cows		Calves		Total	Ratio/100 Ad. Cows	
	No.	%	No.	%	No.	%		Ad. bulls	Calves
Dist. 25	85	42	70	35	46	23	201	121	66
Dist. 27	46	43	40	38	20	19	106	115	50
Both Areas	131	43	110	36	66	21	307	119	60

Table 6. Age composition of harvested adult elk by yearly age classes, 1965

Sex	Age classes by years									Total Prime		Old		Total	Yrlg/100 older	Old/100 other
	1½		2½		3½	4½	5½	6½	7½							
	No.	%	No.	%	No.	No.	No.	No.	No.	No.	%	No.	%	No.		
Bulls	27	37	12	16	15	9	7	1	1	33	45	1	1.4	73	59	1.4
Cows	14	33	8	19	6	4	2	0	3	15	35	6	13	43	48	16
Both	41	35	20	17	21	13	9	1	4	48	41	7	6	116	55	6.4

Table 7. Numbers of elk observed during spring flights in the upper Bitterroot, 1965 and 1966

Drainage	Number of elk	
	1965	1966
Skalkaho-Sleeping Child	116	88
Little Sleeping Child	108	127
Harlan Gulch	63	37
Jerry & Stella Gulches	28	41
Mike & Burk Gulches	15	37
Deer Hollow	19	5
Dugout Gulch-Deer Mtn.	9	8
Rye Creek	14	0
French Basin	114	137
East Fork-north side	158	100
East Fork-south side	252	248
Sula Point-Doran Point	100	107
Sub-total, district 27	996	946
Praine Creek-Porcupine Saddle	30	105
Andrews Creek	22	0
Maynard Creek	3	11
Warm Springs Creek	12	20
Laird Creek	28	12
Blind Draw	23	17
Dickinson Creek	14	5
Spade Creek	31	25
Piquette Creek	18	10
Pine Creek-4th of July Cr.	40	17
Overwhich Creek	55	9
Cow Creek-Stevens Gulch	83	54
Hughes Creek	0	16
South of Hughes Creek	0	14
Chicken Creek	0	18
West Creek	4	30
Coal Creek	0	24
Little Blue Joint Creek	8	33
Blue Joint Creek	22	4
Watchtower Creek	0	7
Flat Creek	0	4
Little West Fork	0	13
Baker Creek	0	6
Trapper Creek	36	15
Chaffin Creek	1	19
McCoy-Spoon	82	40
Sub-total, district 25	512	528
Total, upper Bitterroot	1508	1474